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## Food Production and Nutrition Trends in India and China

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China and India, the two biggest countries of the world, between themselves, today account for over 1700 million people, about 38 percent of mankind. During the decades following World War II, besides Japan (which in many ways is a rather unique and special case), several developing countries with very much smaller populations than China and India, such as, say, Korea and Singapore, have registered impressive progress. However, developmental strategies which have worked well with very small population groups may not be relevant to countries (subcontinents) like India and China with large populations spread over vast distances, varying terrain and diverse climatic/ecological conditions. The experiences of China and India could provide valuable insights of a type which cannot be provided by experiences of much smaller population groups. The fact that the political systems of the two countries are vastly different would make a review of their respective experiences even more rewarding.

Stated simply, the formidable challenge which these countries face with respect to achieving a satisfactory state of nutrition for their peoples boils down to their having to meet two major requirements, namely:

- Ensuring adequate overall availability of food at the national level in the face of the soaring needs of their rapidly growing populations, and

- achieving equitable distribution of the available food supplies in order that all sections of the populations have access to the foods they need.

It must be pointed out, however, at the very outset, that "comparisons" between the two countries could be misleading. The nature of the "information base" and the samples from which data for such comparisons are currently available from the two countries are so vastly different as to vitiate the scientific validity of "comparisons". And here, we must be careful to separate hard data from "tourist impressions". In this paper, only the *trends* indicated from available data are reviewed in order to discern, if possible, some messages which would be of general interest.

**Food production trends:** In Table 1, data regarding nett availability of food grains, as provided by China's Ministry of Agriculture, have been indicated. Tubers, which are officially listed under food grains in China, have been excluded. Data regarding food items, other than

food grains, which were "estimated" by other means have also been excluded. According to a World Bank Report (*Supplementary Paper III Annex B. Report 3391—CHA, China, World Bank, 1981*) the sudden spurt in overall food grain production between 1977 and 1979 could be partly due to the exceptionally good harvest in 1979. For this reason, the figures for 1957 and 1977 covering a 20-year period may be a more reliable indication of food production trends in the country.

Data regarding nett availability of food grains in India are set out in Table 2.

It will be seen that the performance of both the countries with respect to overall augmentation of food supplies at the national level has been nearly similar. The total nett food grain availability in the two countries has nearly doubled during the last 25 years; the per caput availability has shown a marginal increase in both cases.

Both countries have managed to keep their food production ahead of their population growth, and thus the 'first requirement' (ensuring adequate overall food availability) has been substantially met—though it must be confessed that the race

Table 1: Overall nett availability and per caput availability of food grains in China

Overall nett availability (in million metric tons)	1957	1977	1979
Cereals	92.08	149.44	187.83
Pulses and Soyabean	15.19	12.60	9.97
Total	107.27	162.04	198.4
Per caput availability g./day			
Cereals	399.3	436.0	533.3
Pulses	65.7	36.7	30.1
Total	465.0	472.7	563.4

Source: World Bank Report No. 3391. 1981

Table 2: Overall nett availability and per caput availability of food grains in India

Overall nett availability (in million metric tons)	1956	1970	1982
Cereals	52.42	79.29	106.8
Pulses	10.23	10.20	10.07
Total	62.65	89.49	116.87
<b>Per caput availability g /day</b>			
Cereals	360.5	403.1	414.5
Pulses	70.4	51.9	39.2
Total	430.9	455.0	453.7

Source: Economic Survey 1984-85, Ministry of Finance, Government of India

between population growth and food production in both countries is still far too close to warrant complacency.

**Decline in pulse production:** Satisfaction over the remarkable success in overall augmentation of food grain production in both countries must, however, be tempered with the recognition of the fact that it is almost wholly confined to cereals only (especially wheat and rice); pulses production has either remained static (as in India) or has even declined (as in China) (Table 3). It is interesting

holds (though we do not have actual direct evidence to this effect). This underscores the need for according the highest priority to programmes for augmentation of pulse production.

**Equitable distribution:** With respect to the 'second requirement' (achieving equitable distribution), the strategies adopted by the two countries have been necessarily largely conditioned by their political systems.

**The Indian experience:** India's remarkable success in food grain production has unfortunately not been matched by similar success with respect to eradication of poverty. The basic premise underlying India's developmental strategy in the last three decades has been that rapid overall economic growth is the best way to solve the problem of endemic poverty and unemployment. Heavy investments in capital-intensive industries were expected to generate enough jobs in industry, which would help siphon off surplus rural agricultural labour. This postulate would have been quite valid for countries with small populations. In India,

however, the job opportunities generated by industry, despite heavy investments, have so far proved far too inadequate to make a substantial dent in the expanding rural agricultural work force.

In recent years, with the recognition that eradication of poverty would call for more direct measures, anti-poverty and employment/income generation programmes have been initiated; but these have been poorly implemented and their impact has yet to be felt. Indeed the recent budget would appear to reflect Government's disillusionment with the manner of implementation of these well-intentioned programmes.

In sum, therefore, the problem of poverty among large sections of the population still remains, and we have, as a result, the cruel paradox of mounting food surpluses on one side and vast pockets of undernourished populations on the other.

On the one hand, India's buffer stocks are expected to reach an all-time high of 28 million tonnes this year. India is now exporting cereals and indeed has generously gifted cereals to famine-stricken Ethiopia. On the other hand, according to even the most conservative estimates, more than a third of the families in the country have such low income levels that they cannot afford to obtain even the minimal amounts of food that will meet their calorie requirement. Successive reports of the National Nutrition Monitoring Bureau indicate persistent wide prevalence of under-nutrition in children. Cases of kwashiorkor, marasmus and keratomalacia continue to be seen quite commonly among the poorer sections of the communities in many parts of the country.

Thus the flattering figures regarding per caput availability are no more than a statistical illusion; to many millions of

Table 3: Per caput availability of cereals and pulses in China and India

	Per caput availability (g /day)			
	China		India	
	1956	1979	1956	1982
Cereals	399.3	533.3	360.5	414.5
Pulses	65.7	30.1	70.4	39.2

that both countries have shown nearly similar trends of relative decline in pulse production, an inevitable result of the near-exclusive emphasis of modern intensive agricultural technology on cereals. The resultant decline in the relative availability of pulses has been reflected in India in an escalation of the price of pulses relative to cereals (Table 4). This may be expected to have resulted in reduced intake of pulses at least in poor households. Pulses are the major source of lysine in predominantly cereal-based dietaries and help to ensure their protein quality. Reduction in their intake would imply deterioration of the nutritive quality of the diets. Thus, while the green revolution has contributed magnificently to overall increase of cereal production in the countries as a whole, it might have actually brought about a decline in the quality of the diets of the poorest house-

Table 4: Comparative rates of retail prices of pulses/cereals in 1950 and 1983

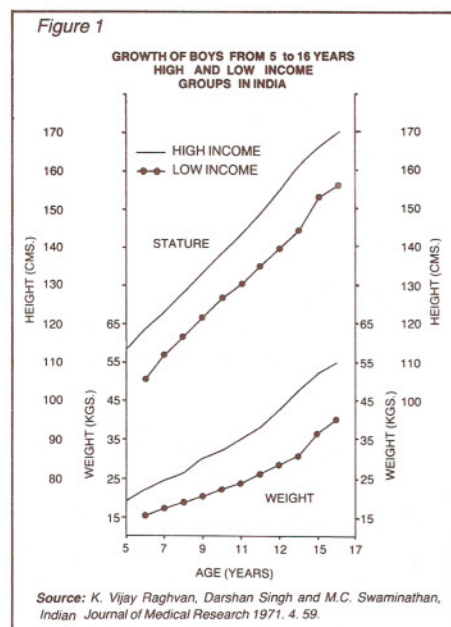
Cereal	Cajanus Cajan (Arhar dal)		Cicer arietinum (Bengal gram dal)	
	1950	1983	1950	1983
Rice	1.2	2.3	0.8	1.9
Wheat	1.2	3.6	0.8	3.1
Sorghum (Jowar)	1.7	3.9	1.2	3.3
Pennisetrum typhoidenum (Bajra)	2.0	4.3	1.4	3.7
Tea Mays (Maize)	1.8	4.1	1.3	3.5
Ebensoril Coracano (Ragi)	1.8	3.7	1.2	3.2

Sources: Agricultural Prices in India 1952-53, Ministry of Food & Agriculture, Govt. of India.

Monthly Abstract of Statistics (Ministry of Agriculture)—Sept. 1983 figure Vol. 37 No.12 1984.

poor in the country, the striking increase in overall food production at the national level is no cause for jubilation; it has made little impact on their life styles and nutritional status.

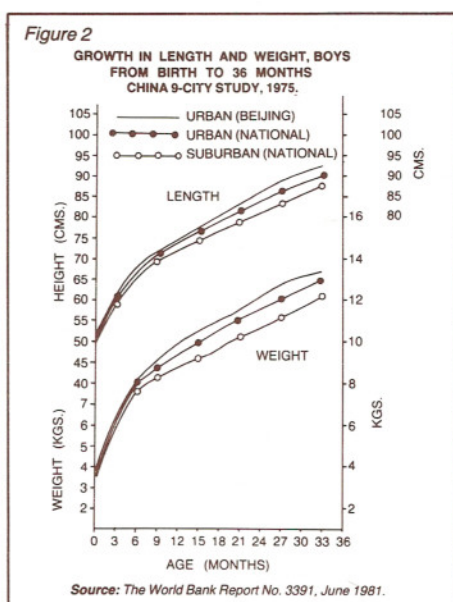
A convenient index of the order of socio-economic and nutritional disparities that exist in the country is provided by available data (K. Vijayaraghavan, D. Singh, and M.C. Swaminathan: *Ind. Jour. Med. Res.* 1981; 4, 59) with respect to growth performance of children of the affluent minority and of the poor majority (Figure 1). It must be conceded,



however, that the difference between the growth of children of the rich and the poor is not entirely attributable to differences in diets; the greater prevalence of infections arising from poor environment and lack of health care in poor communities must have also contributed to undernutrition.

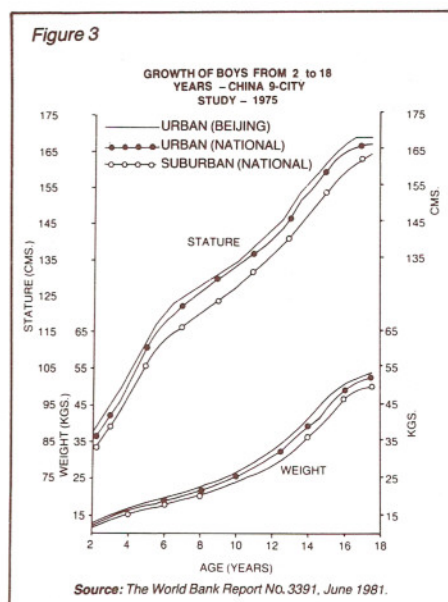
**The Chinese experience:** It may be expected that given its political system, China would have been able to achieve equitable distribution of its available food supplies. The indications, however, are that this has not been the case. The World Bank report speaks of uneven distribution of food supplies within the country leading to the persistence of substandard consumption levels in at least some areas. The uneven distribution is partly traceable to the policy of "regional self-sufficiency" in food grains adopted in 1966, which has since been given up.

The nine-city survey of 1975 (Inst. Ped; *Chinese Academy of Medical Sciences Report* 1975) carried out by the Chinese Academy of Medical Sciences revealed striking urban-suburban differences in



the nutritional status of children; and among urban areas between Beijing, the capital, and other cities (Tables 5 and Figures 2 and 3). It may be expected that the differences between the urban and the more remote rural areas may be wider than those between urban and immediate suburban environs.

According to the World Bank report "urban areas were given preferential treatment in the redistribution of State procured stocks. In addition, urban grain supplies were augmented by large imports". The World Bank report also states that: "It is estimated that current per capita grain consumption in commune households is only two-thirds that in non-commune households." Thus one might expect to find increased malnutrition in the rural areas of low-grain-producing regions and it is not surprising that a Chinese Communist Party Central Committee statement adopted in 1978 reported that more than 100 million people in rural areas suffered from a lack of grain! The World Bank Report goes on



to state that "despite secular improvements in the nutritional status of children in China, and despite the sufficiency of overall nutrient availability, significant numbers of children remain malnourished."

It is also widely recognised that children of the 'rice-eating' south of China are shorter and lighter for their age than those of the north of the country; indeed the difference has been reported to be of such order that separate growth standards for assessment of growth retardation of children of the north and south had been suggested. The use of growth standards appropriate for children of north China would show that a majority of children of the south are undernourished. Since the north-south differences are unlikely to be ethnic, they must be considered to reflect differences in food availability between the two areas of the country. Available reports also indicate wide prevalence of iron-deficiency anaemia, iodine deficiency disease, and rickets (due to the practice of bundling babies

Table 5: Malnutrition in China—Percentage of Children Stunted, 1975

Age (in years)	Males			Females		
	Beijing Urban	National Urban	National Suburban	Beijing Urban	National Urban	National Suburban
3.25	1.7	4.4	21.8	0.3	4.4	24.2
5.25	1.3	5.9	21.5	1.4	2.8	24.5
7.5	1.1	4.4	26.1	1.9	5.8	26.8
9.5	1.2	4.5	23.0	4.8	6.9	33.0
11.5	8.4	10.6	37.1	6.2	13.1	43.6
13.5	16.1	22.7	50.0	4.8	11.1	34.8
15.5	10.6	14.9	39.0	3.0	4.0	10.0
17.5	4.1	7.6	23.6	2.0	2.7	7.5

Source: Report of Inst. Ped. Chin Acad. Sc. 1975

during winter). On the other hand, unlike in the case of India, kwashiorkor, severe marasmus and keratomalacia seem to be extremely rare.

**Concluding comments:** It will thus be seen that the *primary* focus in the transitional stages of development, in both countries, has been (understandably) on rapidly achieving overall augmentation of food supplies by promotion of modern agricultural technology and provision of needed inputs preferentially to those areas and sectors that promised quick results. This strategy could have been perceived by both countries as being in their best national interests. In this process, growth has triumphed (hopefully temporarily) over distributive justice both in China and India, though perhaps to varying degrees.

However, important differences related to inequities in food distribution as between the two countries require consideration.

● Inequities in food consumption are apparently of a much greater order in India than in China. Available reports indicate that extreme poverty and severe undernutrition of the type seen among the poorest population segments in India are rarely encountered in China. While clinical undernutrition is undoubtedly widely prevalent in China as well, cases of kwashiorkor, severe marasmus and keratomalacia, still common in India, appear to be extremely rare in China.

● While in China, inequities in food distribution are mostly inter-regional (Beijing urban—other urban, semi urban and rural) and probably the result of conscious Government/party policy decisions, in India the differences are mostly intra-regional and apparently the result of wide income disparities among different population groups, which persist despite avowed Government intentions and official policies ostensibly aimed at eliminating them.

● In China, with the attainment of overall national self-sufficiency in food grains, attempts are already afoot to eliminate inter-regional disparities. Thus the earlier edict on “regional self-sufficiency” has already been withdrawn. Since current inter-regional disparities in that country were, in the first instance, the result of calculated governmental policies resorted to in the transitional stage, in perceived national interest, in order to rapidly achieve overall national self-sufficiency in food, it is legitimate to expect that now that that objective has been

realised, the Government/party will proceed to correct those disparities through calculated reversal of its earlier policies. India, on the other hand, given its political system, will not find it easy to overcome the social (anti-social?) and market forces which underlie her inequities in food consumption and over which the Government has no direct control. India has, however, even at present, the material resources needed for elimination of much of the undernutrition prevalent in the country. An *imaginative* use of even the existing massive buffer stocks of food grains for well-conceived nation-building programmes can help to trigger social and economic development in the countryside. But this will call for not only genuine political commitment at the highest echelons of its Government but also for renewed idealism and a sense of dedication and service to the poor on the part of its bureaucracy.

## FOUNDATION NEWS

**Project Advisory Committee Meetings** were held at New Delhi on April 5 and 6 to review ongoing projects and to consider the design of two new studies being undertaken by the Foundation. The following scientists participated: Drs. S.G. Srikantia, Shanti Ghosh, K. Ramachandran, Kamala S. Jaya Rao, S.N. Chaudhuri, Meenakshi Mehta, S. Jayam, Mrunalini Puar, A.S. Prabhakar and C. Gopalan.

**New Studies:** The following new studies are being initiated:

(1) Investigation of the effect of iron supplementation on lactation performance of anaemic mothers and growth of their infants. Study Centres: Child-in-Need Institute, Calcutta—Project Leader: Dr. S.N. Chaudhuri; Institute of Child Health, Madras—Project Leader: Dr. S. Jayam; L.T.M.G. Medical College & Hospital, Bombay—Project Leader: Dr. Meenakshi Mehta; Project Coordinator: Dr. S.G. Srikantia. The Foundation is grateful to the Aga Khan Foundation for funding this project.

(2) Assessment of impact of new inputs in the ICDS Programme on its overall functioning: This study will be carried out in 16 States of the Indian Union; study centre in each State is being headed by a competent pediatrician based in a teaching hospital. Consultant: Dr. V.N. Rao

(western zone); Dr. Shanti Ghosh (northern zone); Dr. S.G. Srikantia (southern zone); Dr. K. Halder (eastern zone). This study is being undertaken at the request of the Ministry of Social Welfare, Government of India. The Foundation is grateful to that Ministry for funding this study.

(3) Studies of Adolescent Growth and Development in Girls of Affluent and Poor Indian Communities: Study will be carried out in 4 centres: Mysore (Dr. S.G. Srikantia); Bombay (Dr. S. Mudambi); Delhi (Drs. Usha Bhavaga and Sushma Sharma; and Calcutta (investigator yet to be designated). Dr. S.G. Srikantia is the Project Coordinator.

**Special Publication Series-2** entitled “Use of Growth Charts for Promoting Child Nutrition” (pages 120) has been released.

**Completed studies:** The following studies have been completed and the final reports are under preparation.

(1) **Impact of Rural Development Programmes on Health/Nutritional Status of Poor Communities.** This study was carried out by the Foundation with the help of Dr. Vijay Kumar at Chandigarh and Dr. D.C.S. Reddy at Varanasi. The Foundation is grateful to Dr. S.G. Srikantia and Dr. Kamala S. Jaya Rao for reviewing the results.

(2) **Current Status of Nutrition Education Programmes with the Health (related) Systems.** This study was carried out in two centres:

(1) Faculty of Home Sciences, M.S. University, Baroda under Prof. Tara Gopaldas and Dr. Mrunalini Puar; and

(2) Institute of Home Economics, Delhi, under Dr. S. Malhan. The report of the former study is complete; that of the latter is under preparation.

## NUTRITION NEWS

Nutrition Society of India: The Annual Meeting of the Society will be held on November 20–27 at Baroda. Professor Tara Gopaldas, Faculty of Home Science, Baroda University is the Chief Organiser.

We are grateful to UNICEF for its gracious offer to renew the present arrangement for a matching grant to partially meet the cost of this publication.